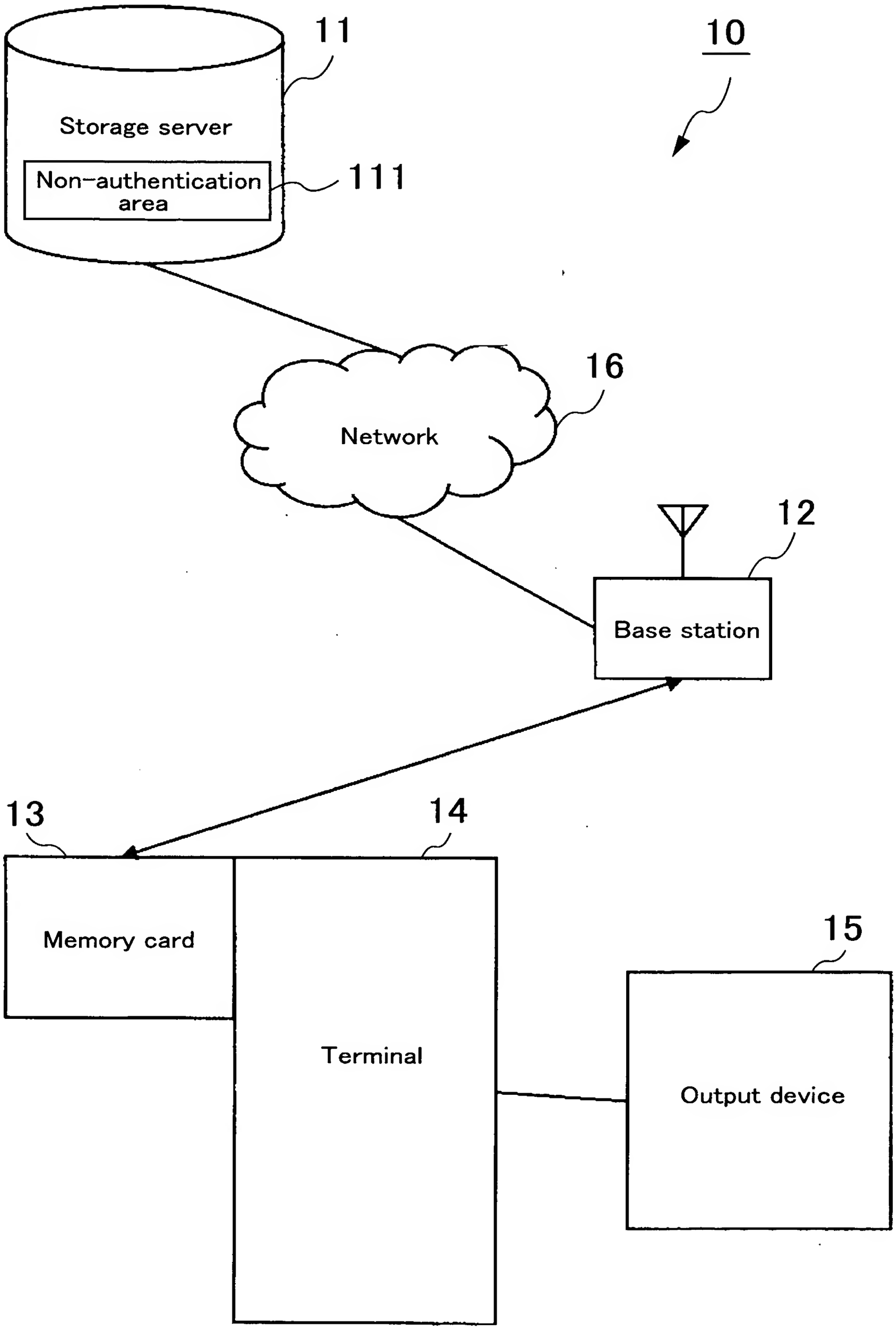
10
11
Storage server
Non-authentication area
111
16
Network
12
Base station
13
Memory card
14
Terminal
15
Output device

Fig. 1

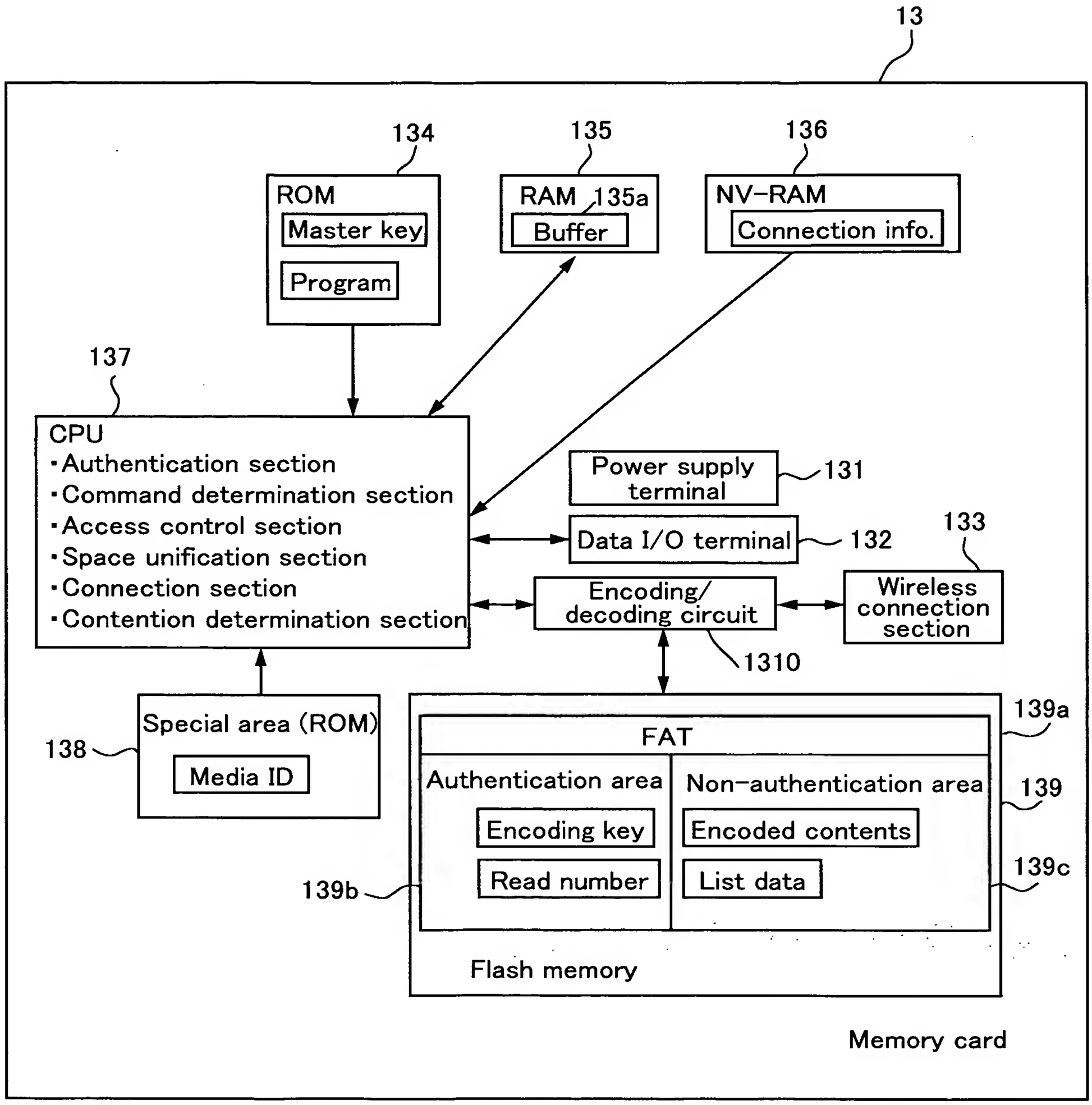
13
134
ROM
Master key
Program
135
RAM
135a
Buffer
136
NV-RAM
Connection info.
137
CPU
・Authentication section
・Command determination section
・Access control section
・Space unification section
・Connection section
・Contention determination section
Power supply terminal
131
Data I/O terminal
132
133
Wireless connection section
Encoding/ decoding circuit
1310
138
Special area (ROM)
Media ID
139a
FAT
Authentication area
Encoding key
Read number
139b
Non-authentication area
Encoded contents
List data
139
139c
Flash memory
Memory card

Fig. 2

Connection info.(NV-RAM)

136

URL of Destination	http://storage.server.com/rm/login.asp
Identification ID for connection	301938472G322DPE
Connection authentication password	F32248DCPDCL20EM

Fig. 3

139c

Data file for list

Last update date	03/10/15/20:12:00

⋮

Ch	Recorded date	Time	Resolution	Time of recording	Protectionial
BS 7	03/10/10	19:00	SP	01:00	Unprotected
Name of video data file				Title	
/DVD_RTAV/MOV00011.MPG				BS Special	

Ch	Recorded date	Time	Resolution	Time of recording	Protectionial
12	03/10/10	19:00	SP	01:24	Unprotected
Name of video data file				Title	
/DVD_RTAV/MOV00012.MPG				Soccer game	

Ch	Recorded date	Time	Resolution	Time of recording	Protectionial
12	03/10/11	21:00	SP	00:28	Unprotected
Name of video data file				Title	
/DVD_RTAV/MOV00013.MPG				Music Special	

⋮

Fig. 4

Program navigation | SD

701

No	Ch	Recorded date	Time	Title
005	BS 7	03/10/10	19:00	BS Special
006	12	03/10/10	14:00	Soccer game
007	12	03/10/11	21:00	Music Special
008	4	03/10/13	19:00	History Special

Fig. 5

FAT

139a

	Address	Data ID
Authentication area	0000	ENCRYPT/MOV00011.MPG
	⋮	⋮
	0100	ENCRYPT/MOV00012.MPG
	⋮	⋮
Non-authentication area	3000	DVD_RTAV/MOV00011.MPG
	⋮	⋮
Non-authentication area (server)	4000	DVD_RTAV/MOV00012.MPG
	⋮	⋮

Fig. 6

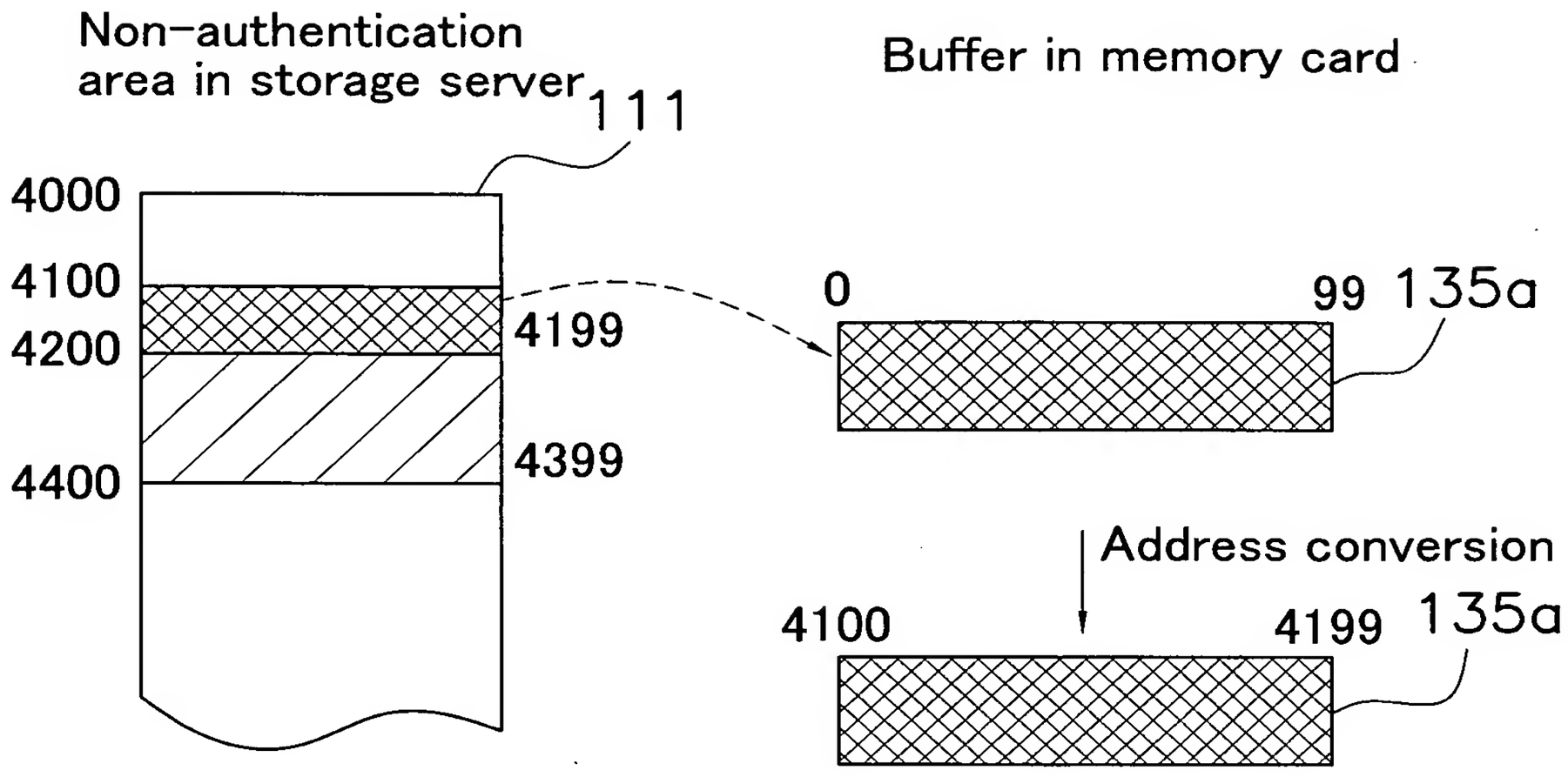
Non-authentication
area in storage server
111
4000
4100
4200
4199
4399
4400
Buffer in memory card
0
99
135a
Address conversion
4100
4199
135a

Fig. 7

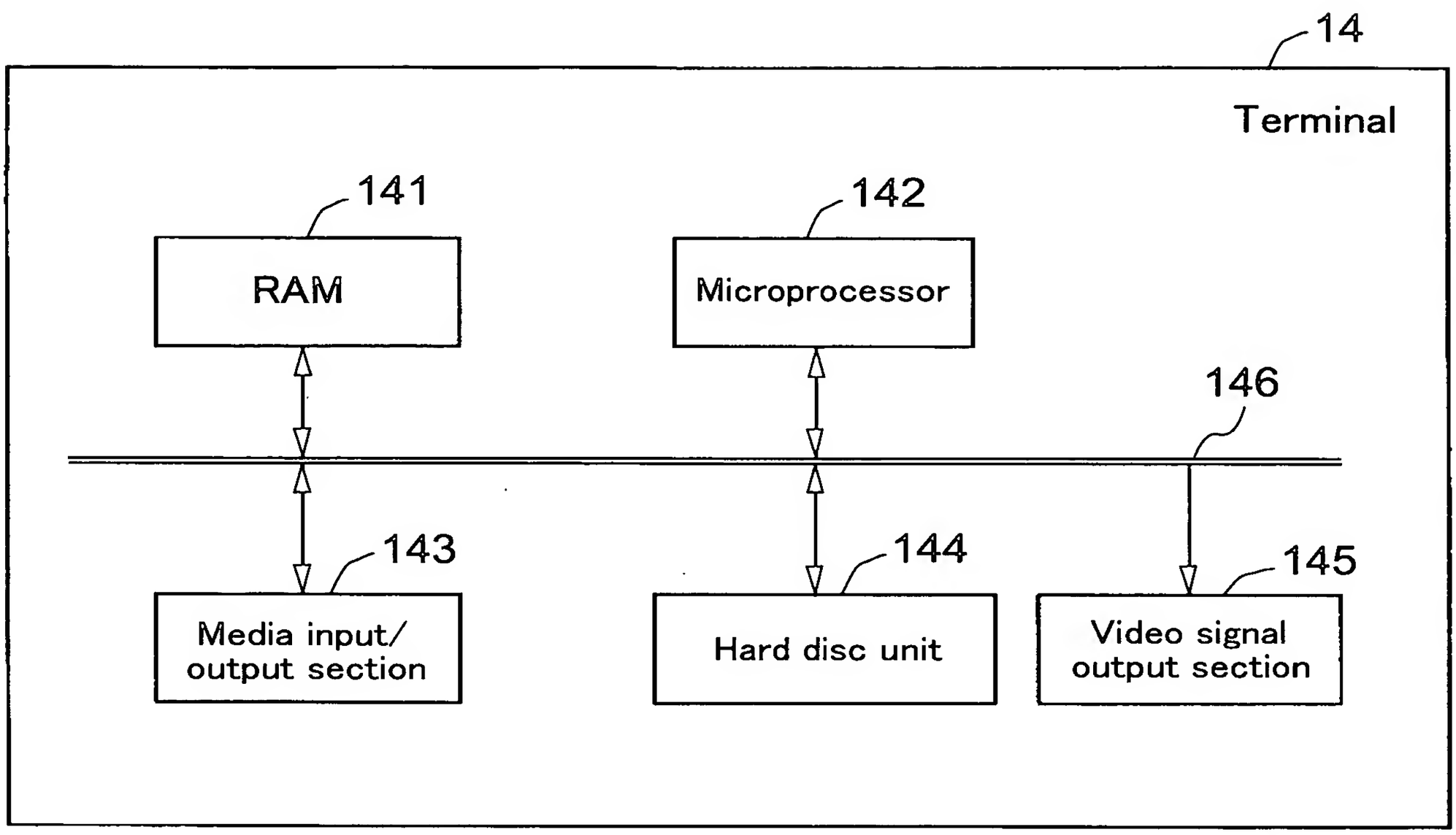
14
Terminal
141
RAM
142
Microprocessor
146
143
Media input/
output section
144
Hard disc unit
145
Video signal
output section

Fig. 8

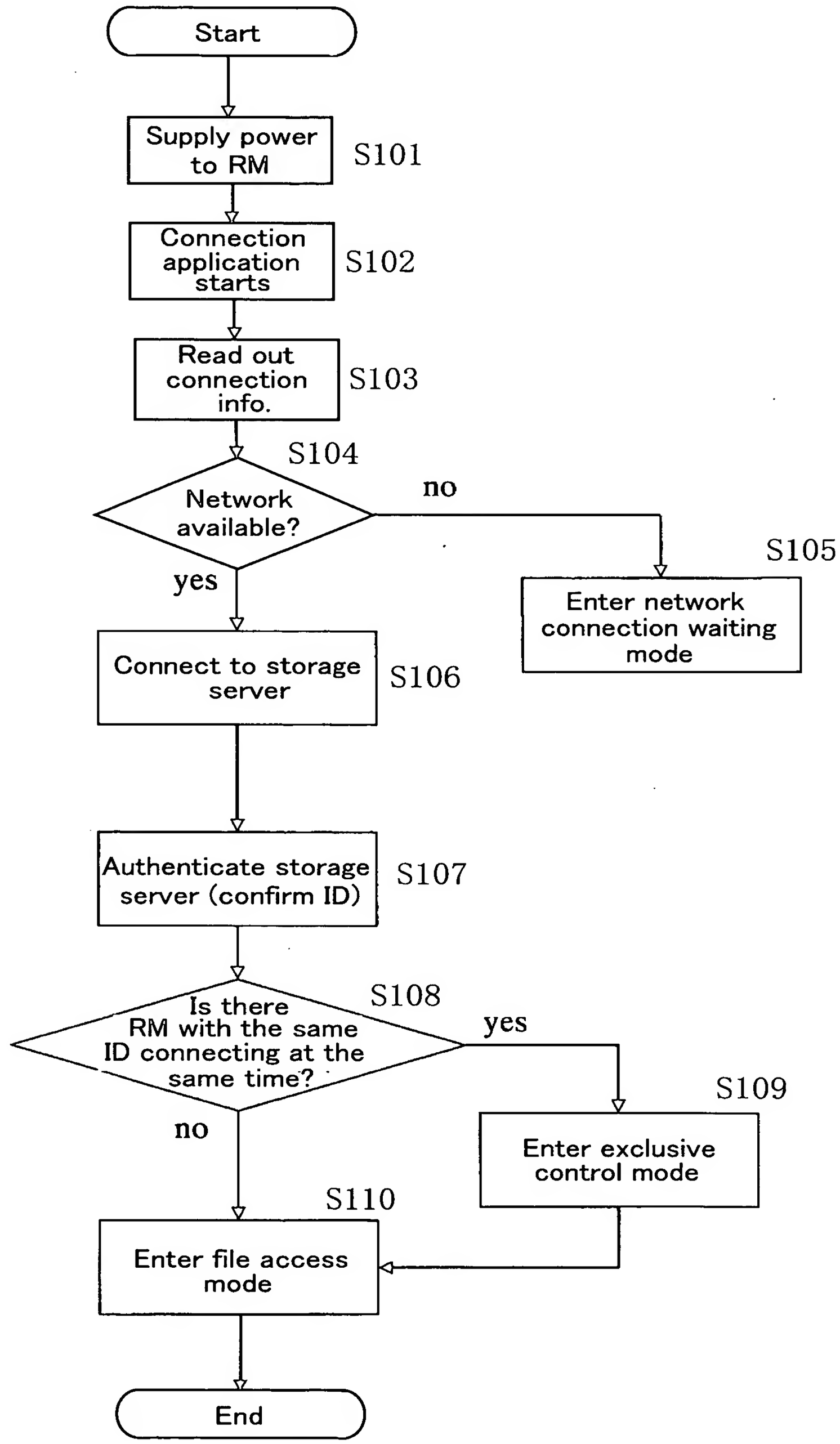
Start
Supply power to RM
S101
Connection application starts
S102
Read out connection info.
S103
S104
Network available?
no
S105
Enter network connection waiting mode
yes
Connect to storage server
S106
Authenticate storage server (confirm ID)
S107
S108
Is there RM with the same ID connecting at the same time?
yes
S109
Enter exclusive control mode
no
S110
Enter file access mode
End

Fig. 9

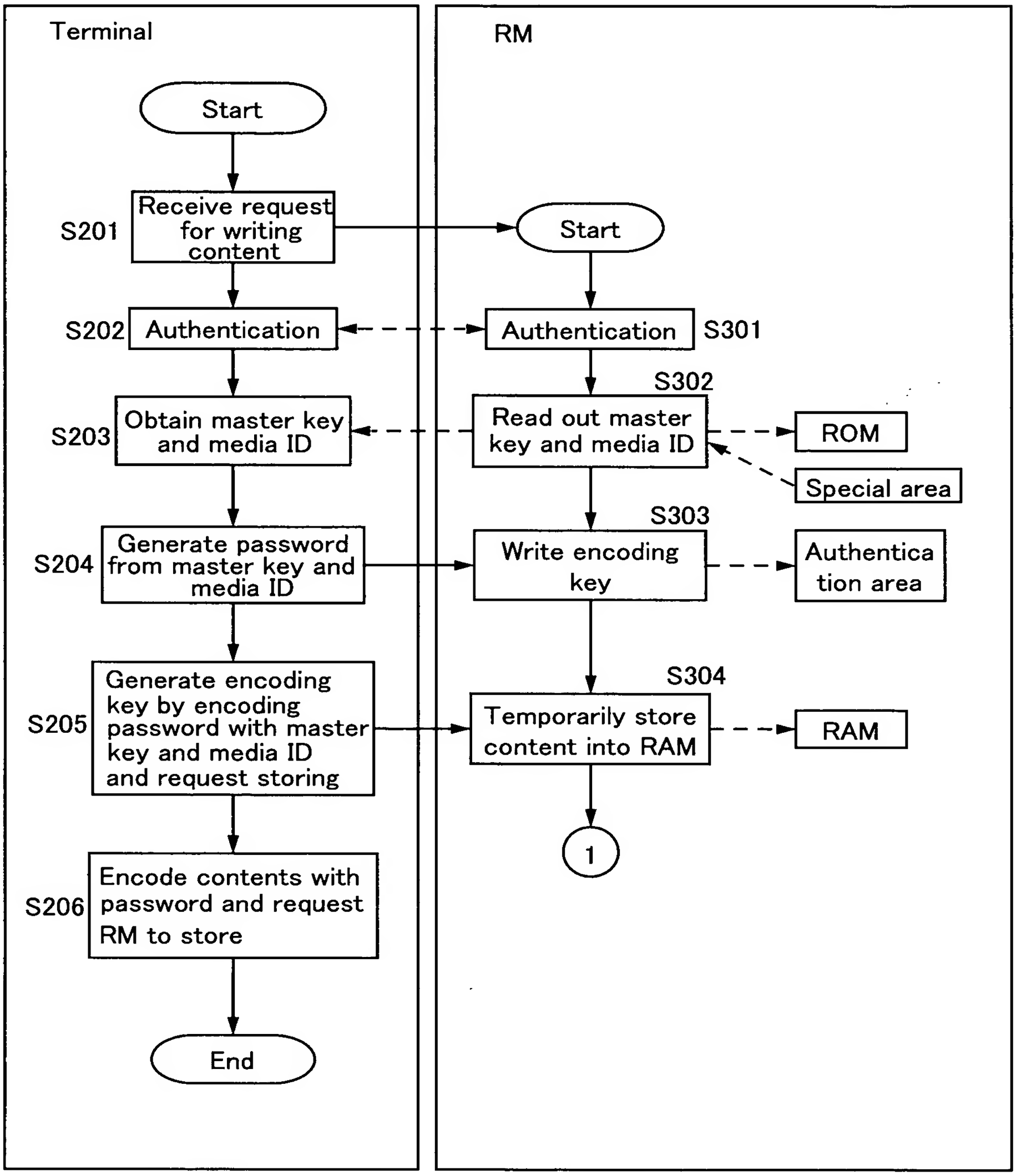
Terminal
RM
Start
S201
Receive request for writing content
Start
S202
Authentication
Authentication
S301
S302
S203
Obtain master key and media ID
Read out master key and media ID
ROM
Special area
S303
S204
Generate password from master key and media ID
Write encoding key
Authentication area
S304
S205
Generate encoding key by encoding password with master key and media ID and request storing
Temporarily store content into RAM
RAM
1
S206
Encode contents with password and request RM to store
End

Fig. 10A

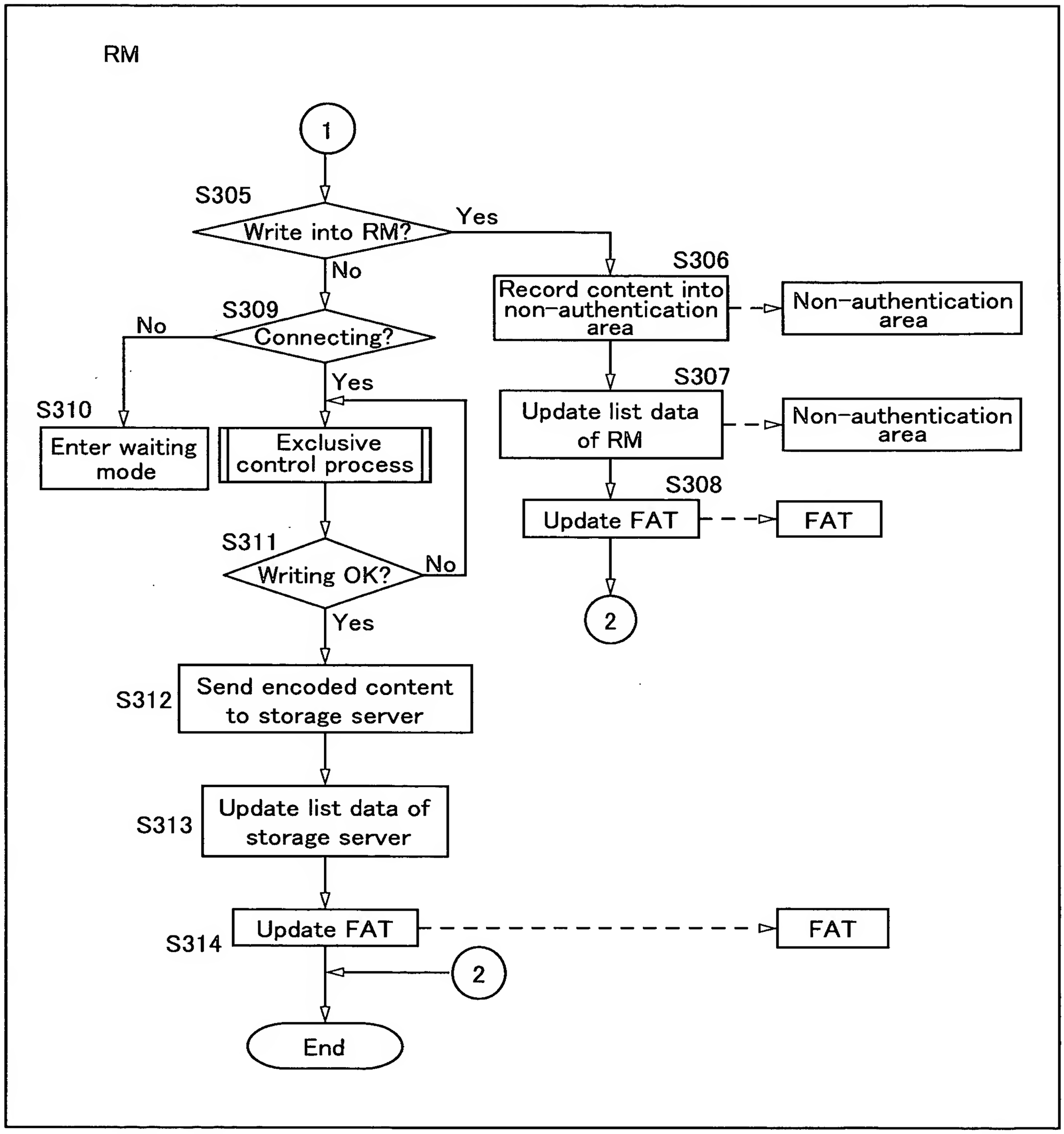
RM
1
S305
Write into RM?
Yes
No
S306
Record content into non-authentication area
Non-authentication area
S309
Connecting?
No
Yes
S307
Update list data of RM
Non-authentication area
S310
Enter waiting mode
Exclusive control process
S308
Update FAT
FAT
S311
Writing OK?
No
Yes
2
S312
Send encoded content to storage server
S313
Update list data of storage server
S314
Update FAT
FAT
2
End

Fig. 10B

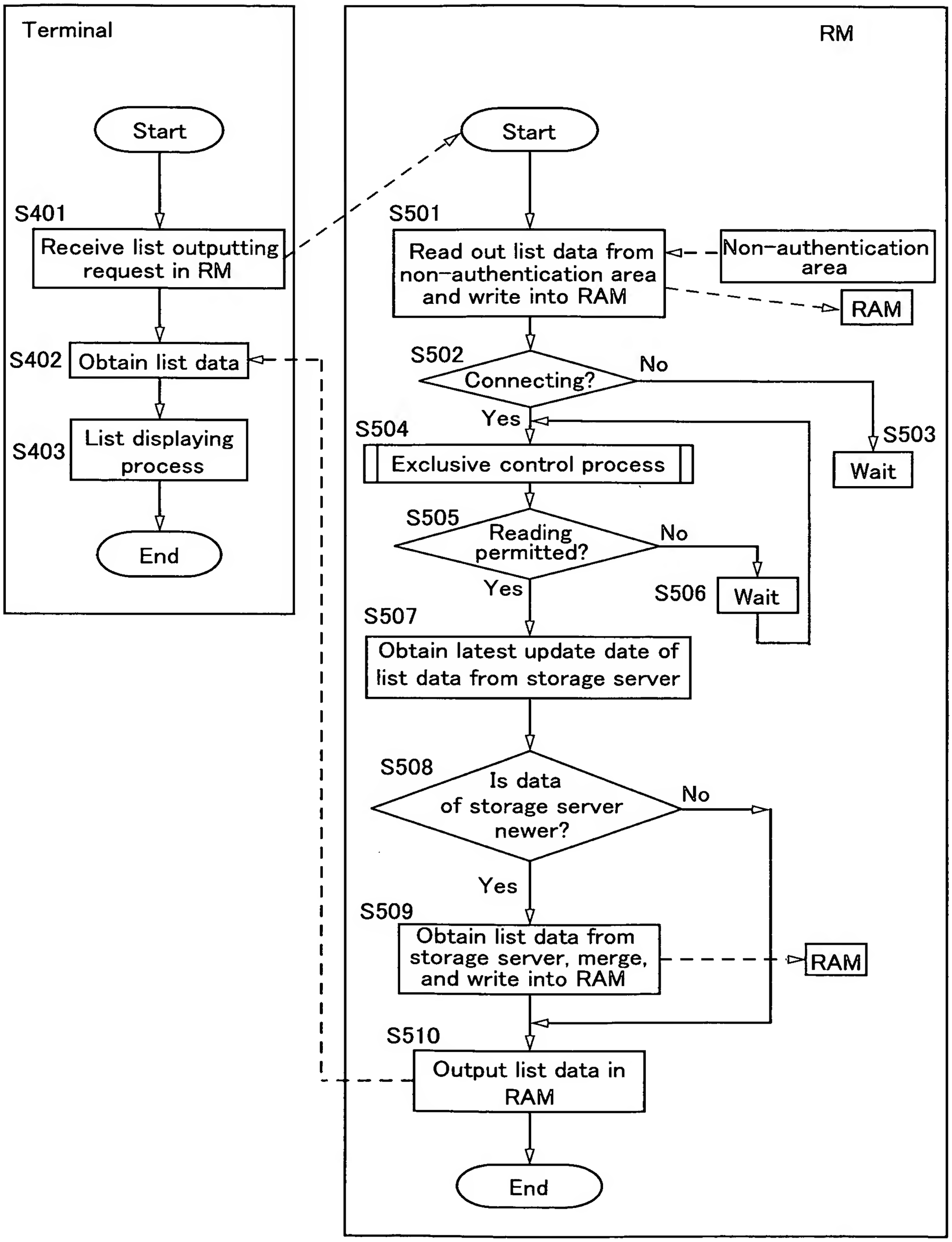
Terminal
RM
Start
S401
Receive list outputting request in RM
S402
Obtain list data
S403
List displaying process
End
Start
S501
Read out list data from non-authentication area and write into RAM
Non-authentication area
RAM
S502
Connecting?
No
S503
Wait
Yes
S504
Exclusive control process
S505
Reading permitted?
No
S506
Wait
Yes
S507
Obtain latest update date of list data from storage server
S508
Is data of storage server newer?
No
Yes
S509
Obtain list data from storage server, merge, and write into RAM
RAM
S510
Output list data in RAM
End

Fig. 11

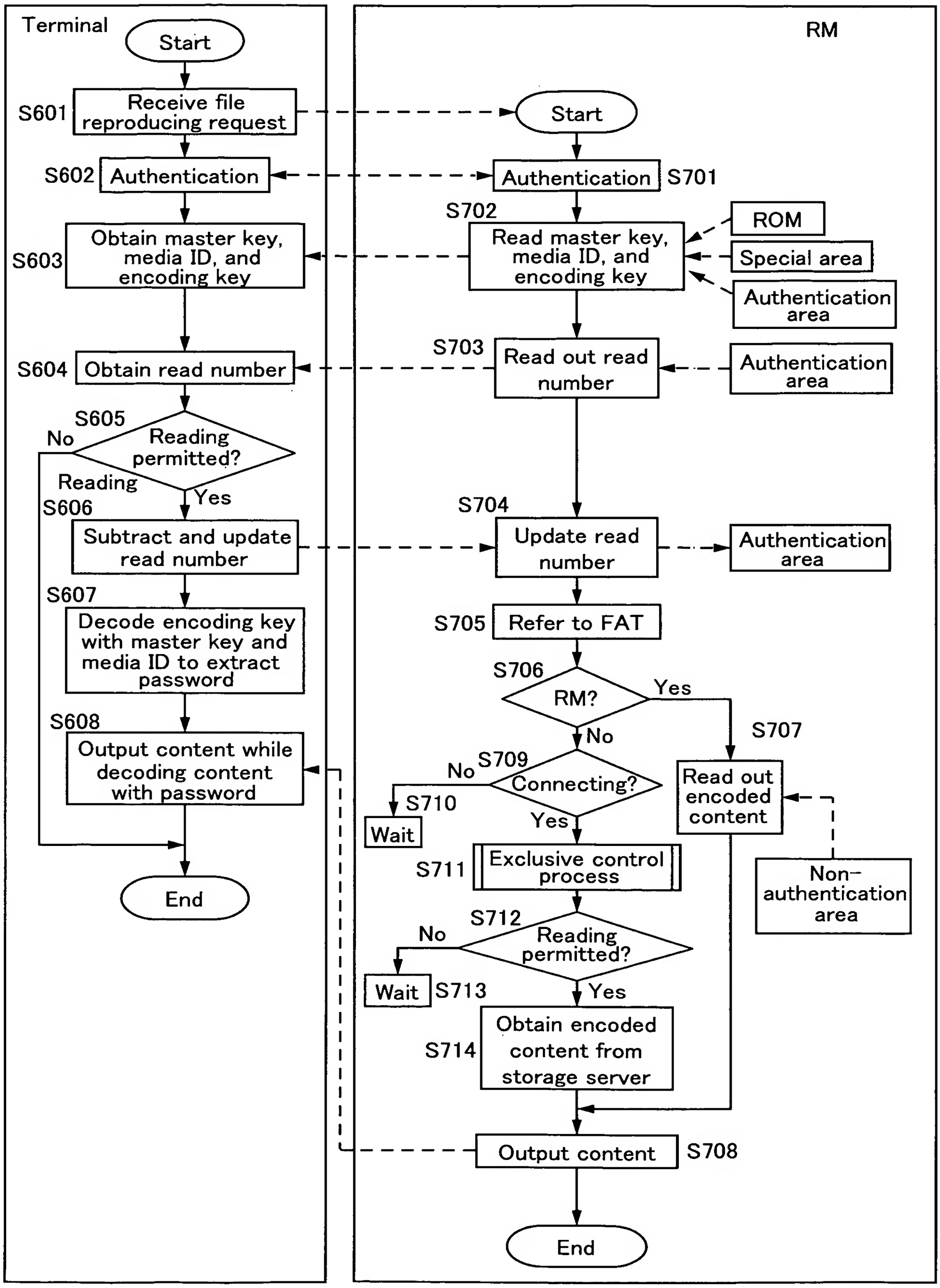
Terminal
Start
S601
Receive file reproducing request
S602
Authentication
S603
Obtain master key, media ID, and encoding key
S604
Obtain read number
S605
No
Reading permitted?
Reading
Yes
S606
Subtract and update read number
S607
Decode encoding key with master key and media ID to extract password
S608
Output content while decoding content with password
End
RM
Start
Authentication
S701
S702
Read master key, media ID, and encoding key
ROM
Special area
Authentication area
S703
Read out read number
Authentication area
S704
Update read number
Authentication area
S705
Refer to FAT
S706
RM?
Yes
No
S707
Read out encoded content
S709
No
Connecting?
S710
Wait
Yes
S711
Exclusive control process
Non-authentication area
S712
No
Reading permitted?
Wait
S713
Yes
S714
Obtain encoded content from storage server
Output content
S708
End

Fig. 12

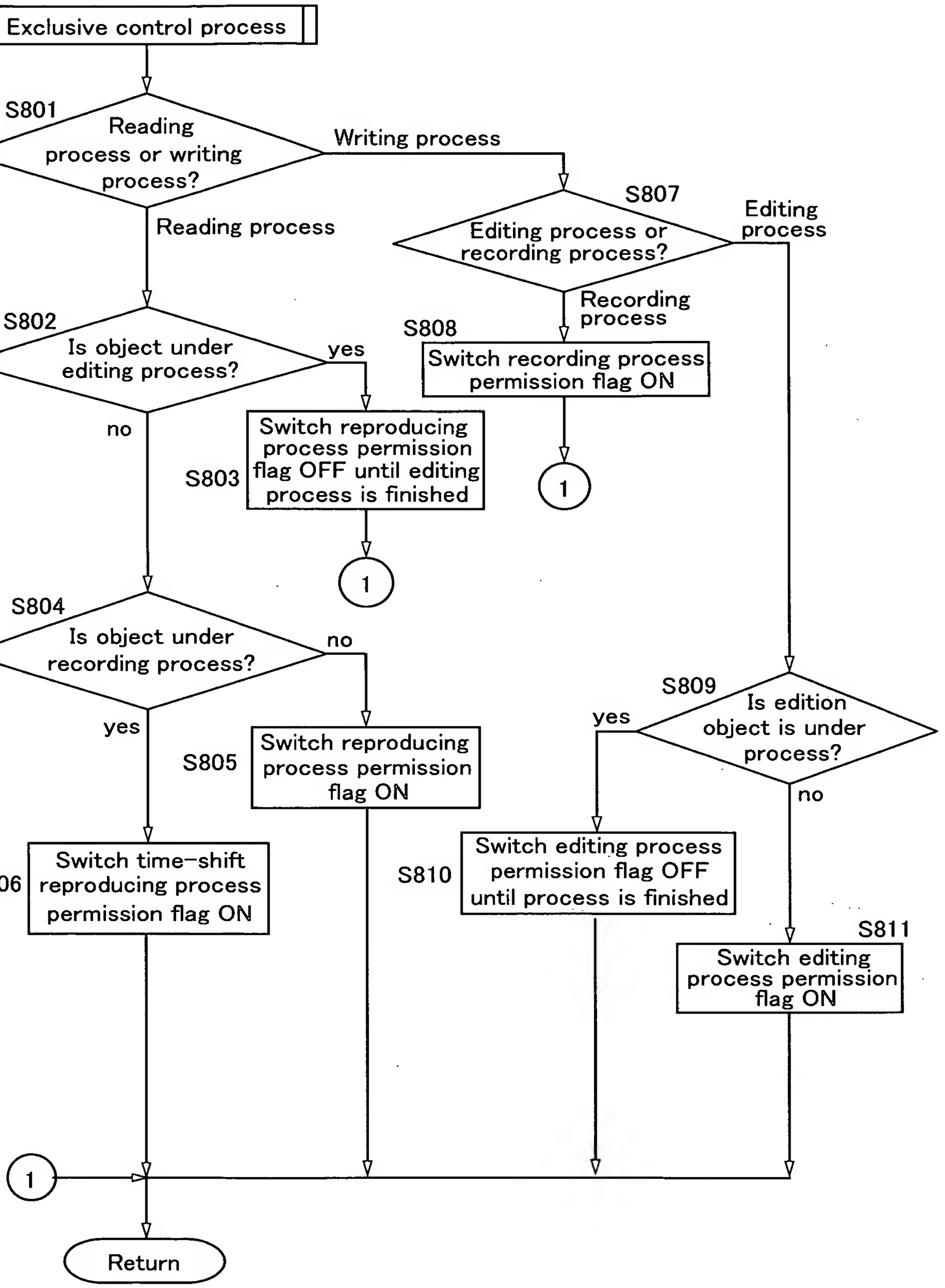
Exclusive control process
S801
Reading process or writing process?
Writing process
Reading process
S807
Editing process or recording process?
Editing process
Recording process
S802
Is object under editing process?
yes
S808
Switch recording process permission flag ON
no
Switch reproducing process permission flag OFF until editing process is finished
S803
1
1
S804
Is object under recording process?
no
yes
S805
Switch reproducing process permission flag ON
S809
Is edition object is under process?
yes
no
S806
Switch time-shift reproducing process permission flag ON
S810
Switch editing process permission flag OFF until process is finished
S811
Switch editing process permission flag ON
1
Return

Fig. 13

Program navigation	SD	User name: ○○○

No	Ch	Recorded date	Time	Title	Access rights
005	BS 7	03/10/10	19:00	BS special	Full
006	12	03/10/10	14:00	Soccer game	Read only
007	12	03/10/11	21:00	Special feature of music	Full
008	4	03/10/13	19:00	History special	Non access

Fig. 14

User management table	
Last update date	03/10/15/20:12:00

⋮

Group ID	0549SDG6EG35
Accessible removable media	

Identification ID for connection	301938472G322DPE
Connection authentication password	F32248DCPDCL20EM
Access right	All

Identification ID for connection	DK937546ED354984
Connection authentication password	DKPE03KDUI38DUOL
Access right	User: Mike

Identification ID for connection	6584316E8D4Q6545
Connection authentication password	DKUE69die36423di
Access right	Guest

⋮

⋮

Fig. 15

Dubbing | SD→SD

Select access right for SD to be produced

Access right	Description
ALL	Reproduction, deletion and edition of all data are permitted
Guest	Only reproduction of data permitted to guests is permitted
User:Mike	Reproduction of data permitted to guests and reproduction, deletion and edition of data for Mike are permitted
User:Mary	Reproduction of data permitted to guests and reproduction, deletion and edition of data for Mike are permitted

Add new user

Fig. 16